

**IN THE CLAIMS**

1. (Currently Amended) A method of removing a photoresist layer comprising:  
positioning a substrate comprising a photoresist layer into a processing chamber;  
removing the photoresist layer using a plasma;  
monitoring the plasma for both a ~~hydrogen~~ byproduct optical emission and an  
oxygen a reagent optical emission during the process; and  
stopping the etching upon either the ~~hydrogen~~ byproduct optical emission  
obtaining a first level or and the oxygen reagent optical emission obtaining a second  
level, ~~or both~~; and  
~~determining from at least one of the monitored optical emissions whether a  
cleaning cycle is necessary, whether components within the chamber are degrading, or  
both.~~
2. (Original) The method of claim 1 wherein the photoresist layer comprises a  
hardened crust layer.
- 3-5. (Cancelled)
6. (Currently Amended) The method of claim 2, wherein the monitoring step  
produces ~~a signal~~ signals having ~~[[a]] first level~~ levels while etching the crust and  
produces ~~a signal~~ signals having ~~[[a]] second level~~ levels after the crust has been  
removed.
7. (Currently Amended) The method of claim 1, wherein the byproduct is hydrogen  
and the hydrogen optical emission occurs at a wavelength of about 656 nm.
8. (Cancelled)
9. (Currently Amended) The method of claim 1, wherein the reagent is oxygen and  
the oxygen optical emission occurs at a wavelength of about 777 nm.

10-13. (Cancelled)

14. (Currently Amended) The method of claim [[13]] 6, wherein the monitoring step produces signals having ~~oxygen optical emission signal~~ has a third level after the photoresist is removed.

15. (Cancelled)

16. (Currently Amended) A method of etching a photoresist layer comprising:  
providing a substrate comprising a photoresist layer to a process chamber;  
etching the photoresist layer using a plasma; and  
monitoring the plasma for both a byproduct ~~hydrogen~~ optical emission and a reagent ~~an oxygen~~ optical emission while etching; and  
~~determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.~~

17. (Original) The method of claim 16 wherein the photoresist layer comprises a crust.

18-20. (Cancelled)

21. (Currently Amended) The method of claim 16, wherein the byproduct is hydrogen and the hydrogen optical emission occurs at a wavelength of about 656 nm.

22. (Currently Amended) The method of claim 16, wherein the reagent is oxygen and the oxygen optical emission occurs at a wavelength of about 777 nm.

23-27. (Cancelled)

28. (Previously Presented) The method of claim 1, further comprising:  
comparing the monitored optical emissions to a fingerprint of a clean chamber.
29. (Cancelled)
30. (Previously Presented) The method of claim 16, further comprising:  
comparing the monitored optical emissions to a fingerprint of a clean chamber.
31. (Currently Amended) The method of claim 16, ~~wherein the determining step~~ further comprising ~~comprises~~:  
determining the condition of a plasma source.
32. (Currently Amended) The method of claim 16 ~~wherein the determining step~~ further comprising ~~comprises~~:  
determining the condition of an inner surface of the processing chamber.
33. (Currently Amended) The method of claim 1, ~~wherein the determining step~~ further comprising ~~comprises~~:  
determining the condition of a plasma source.
34. (Currently Amended) The method of claim 1, ~~wherein the determining step~~ further comprising ~~comprises~~:  
determining the condition of an inner surface of the processing chamber.
35. (Currently Amended) A method of etching a photoresist layer comprising:  
providing a substrate comprising a photoresist layer to a process chamber;  
etching the photoresist layer using a plasma;  
determining an early endpoint indicator by monitoring the plasma for at least one  
a reagent optical emission while etching; and  
~~determining from at least one of the monitored optical emissions whether a~~  
~~cleaning cycle is necessary, whether components within the chamber are degrading, or~~

both a final endpoint indicator by monitoring the plasma for a byproduct optical emission while etching.

36. (Currently Amended) The method of claim 35, wherein the ~~monitoring~~ determining a final endpoint indicator step further comprises:

monitoring the plasma for a hydrogen optical emission while etching.

37. (Currently Amended) The method of claim 36, wherein the ~~monitoring~~ determining an early endpoint indicator step further comprises:

monitoring the plasma for an oxygen optical emission while etching.

38. (Currently Amended) The method of claim 35, wherein the ~~monitoring~~ determining an early endpoint indicator step further comprises:

monitoring the plasma for an oxygen optical emission while etching.

39. (Currently Amended) The method of claim 35 ~~wherein the determining step~~ further comprising ~~comprises~~:

determining the condition of a plasma source.

40. (Currently Amended) The method of claim 35, ~~wherein the determining step~~ further comprising ~~comprises~~:

determining the condition of an inner surface of the processing chamber.

41. (New) The method of claim 1, further comprising:

determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.

42. (New) The method of claim 1, wherein the monitoring step further comprises:

determining an early endpoint indicator from the reagent optical emission.

43. (New) The method of claim 1, wherein the monitoring step further comprises:  
determining a final endpoint indicator from the byproduct optical emission.
44. (New) The method of claim 16, further comprising:  
determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.
45. (New) The method of claim 35, further comprising:  
determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.